

# Arizona Game and Fish Department



# Bats of Arizona



Arizona Game and Fish Department

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## Fear ...

"Fear is the main source of superstition, and one of the main sources of cruelty. To conquer fear is the beginning of wisdom."

**Bertrand Russell**, *Unpopular Essays* (1950),

*"Outline of Intellectual Rubbish"*

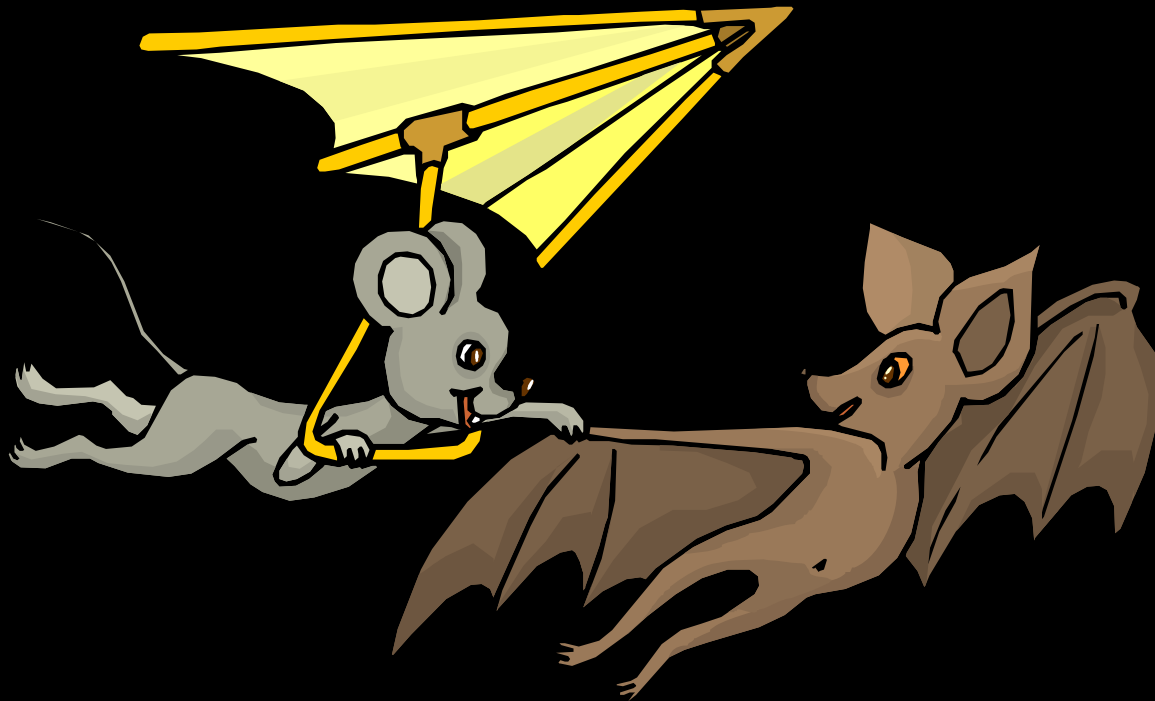
*British author, mathematician, & philosopher (1872 - 1970)*



What is a Bat?



# What Is a Bat?



A Flying Mouse?

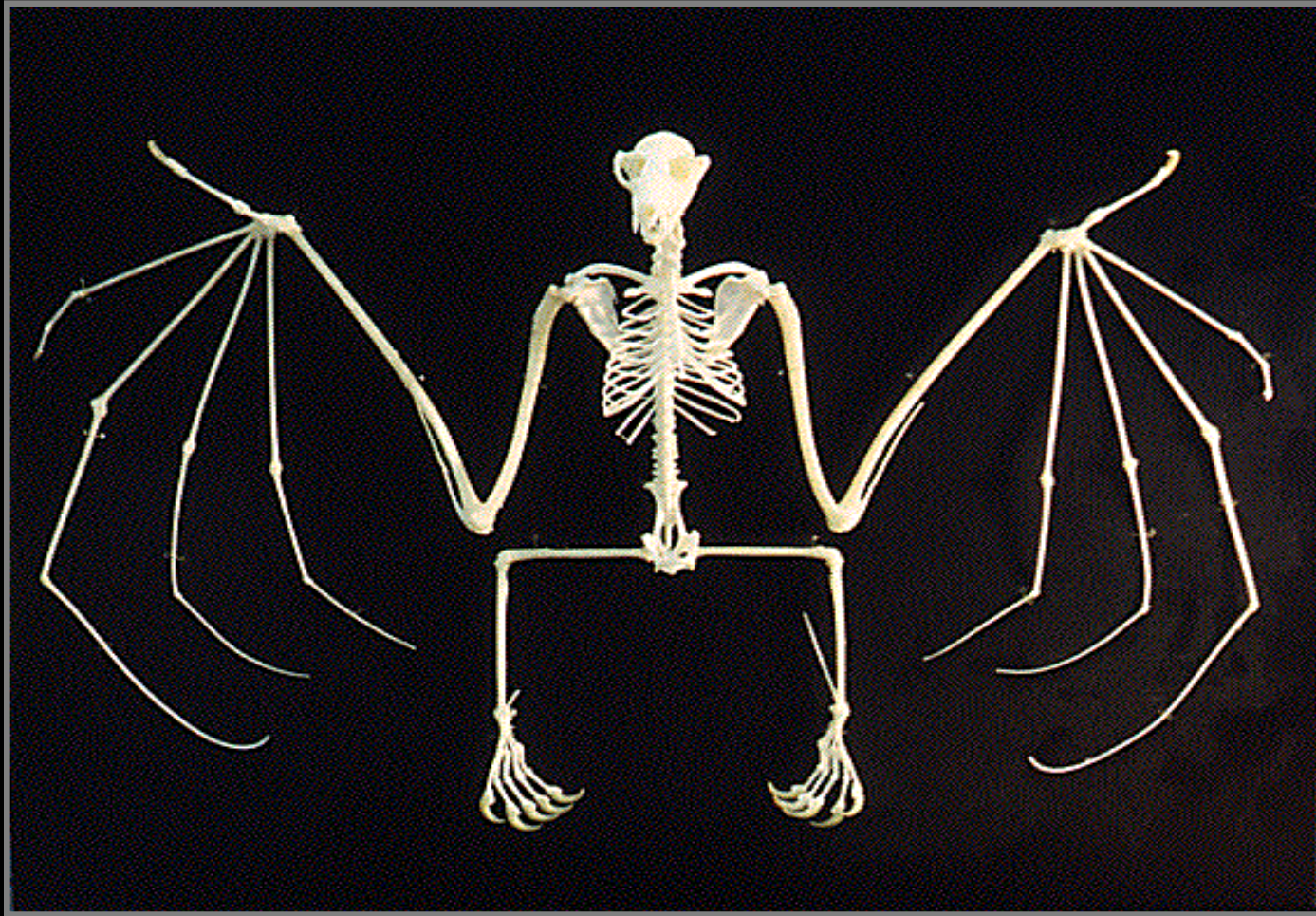


# Bats Are Mammals



- They belong to the order Chiroptera which means literally - "hand + wing"

# Bat Basics: Anatomy



**Arm and hand bones are elongated to support the wing**





# Bat Basics: Benefits

Bats Pollinate Flowers







## Bat Fact ...

*Tequila is produced from agave plants -- seed production drops to 1/3000<sup>th</sup> of normal without bat pollinators!!*

**Think of Long-nosed Bats as our  
Tequila Connection!**

# Bat Basics: Benefits

Bats Help to Control Pests





## Bat Fact...

Loss of bats increases demand for chemical pesticides, that can jeopardize whole ecosystems of other plant and animal species!!



# Bat Basics: Variety



Bats Come in  
Striking Colors,  
and Specialized  
Facial Shapes



# Bat Basics: Variety



...And Different Sizes

# Bat Basics: Variety



But most Arizona Bats  
are "LBJ's"

*LBJ = Little Brown Jobs*





# Where Do Bats Live?

- Bats use different types of roosts throughout the year
- Roosts can function as maternity, hibernation, day, or night roosts
- Bats select a variety of different structures for roost sites...

# Bats Roost in Caves



Mexican Free-tailed Bats Maternity Colony

*(Tadarida brasiliensis)*

# Bat Fact...



Free tailed bats  
from three caves  
near San Antonio,  
Texas, eat a million  
pounds of insects  
nightly, including  
many costly pests.



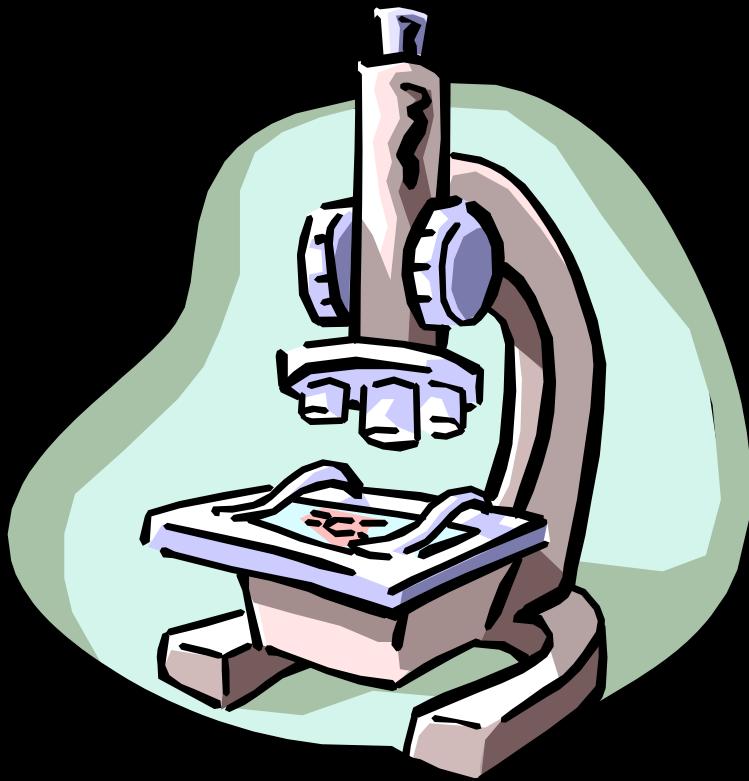
Entrance to Bracken Cave, Texas





Bats Hibernate in Caves...

## Bat Fact ...



- Bat droppings in caves support whole ecosystems of unique organisms, including bacteria useful in detoxifying wastes, improving detergents , and producing gasohol and antibiotics!!



# Bats Roost In Buildings...



Big brown bats  
(*Eptesicus fuscus*)





## Bat Fact...

A colony of 150  
big brown bats  
can protect local  
farmers from  
about 33 million  
rootworms each  
summer!!



# Bats Roost in Rock Crevices...



# Bats Roost Under Bark...

Some species of  
Arizona bats roost  
under exfoliating  
tree bark

**Southwestern Bat**  
*(Myotis auriculus)*

*We're in here*







Bats Roost in Mines...

California Leaf-nosed Bat  
(*Macrotis californicus*)



# Bat Fact...

California leaf-nosed bat can live in hot desert climates for months at a time without drinking!!





# Bats Roost in Trees...



**Western Red Bat**  
*(Lasiurus blossevilli)*  
nursing two pups

Bats that roost  
in caves and  
mines are often  
colonial by  
nature...

Bats that use  
trees are often  
found roosting  
in small groups  
or alone





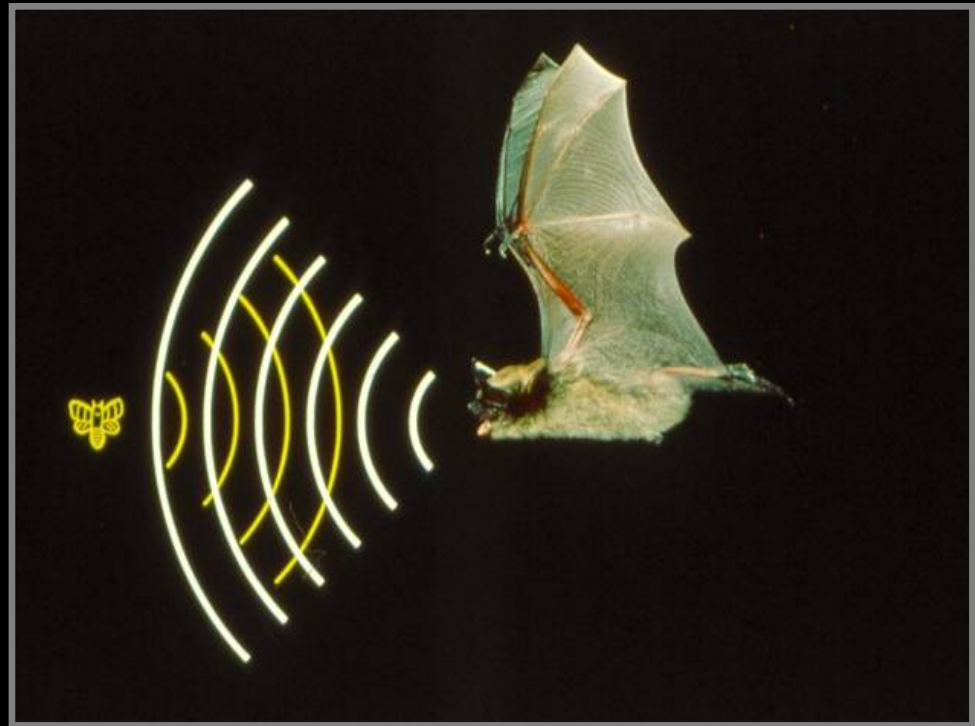
# Bats Roost Under Bridges...



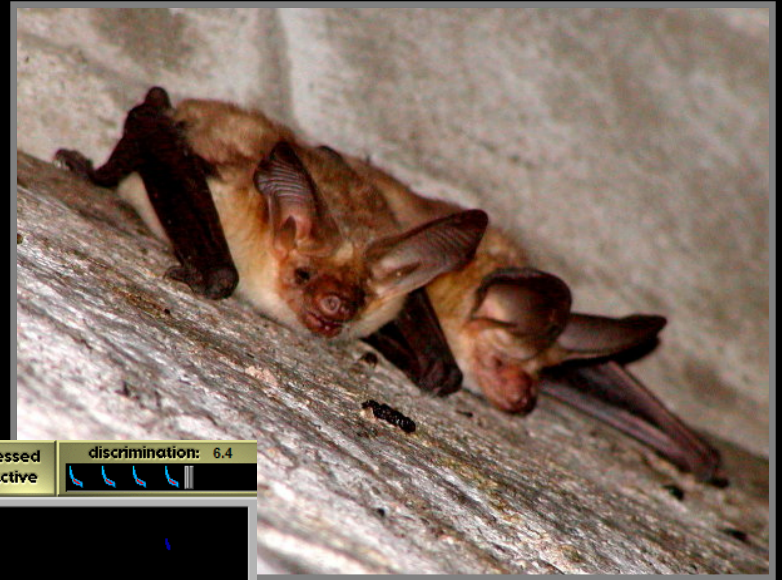
# Echolocation

Insect eating bats  
use echolocation to  
search for and  
capture prey...

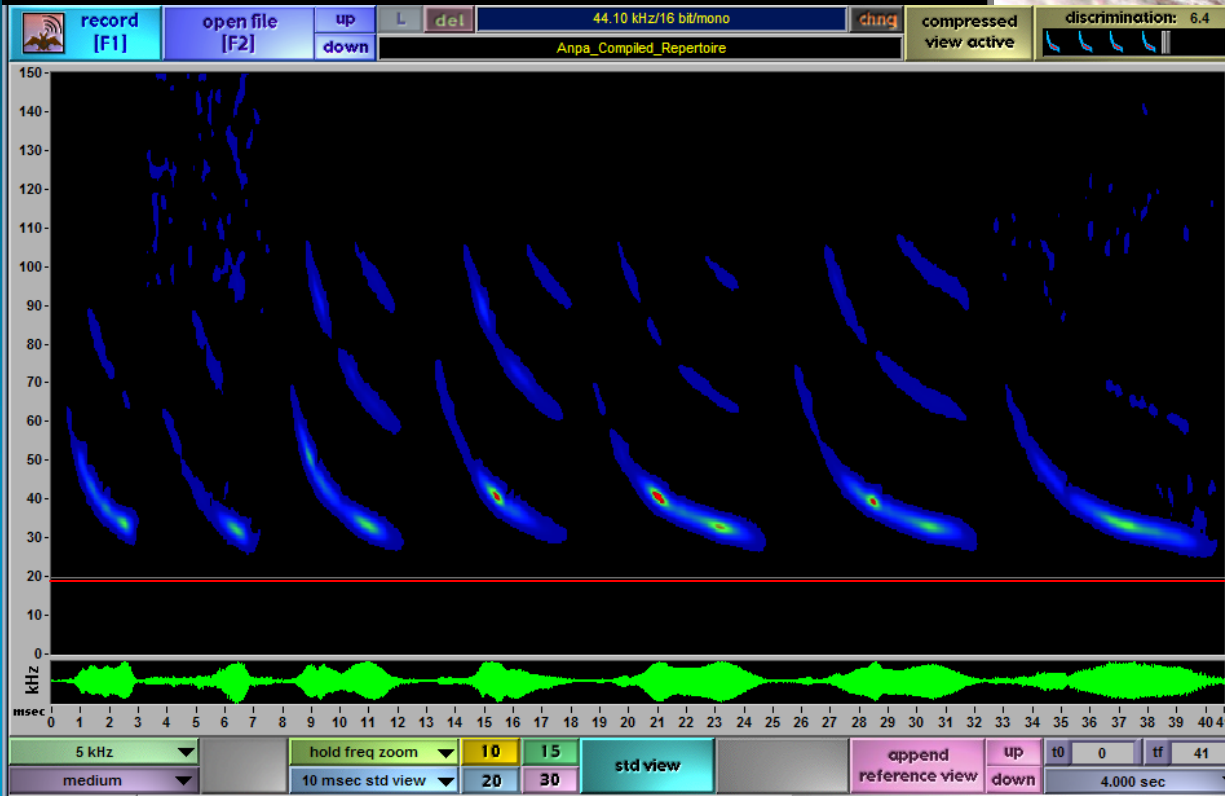
They emit ultrasonic  
sounds and interpret  
the echoes they  
receive



# Echolocation Sonogram



Pallid bats  
(*Antrozous pallidus*)



Human  
Hearing  
Range





# Bats of Arizona

There Are 28 Bat Species in..  
Four Diverse Families :

Mormoopidae - Ghost-faced Bats

Phyllostomidae - Leaf-nosed Bats

Vespertilionidae - Plain-nosed Bats

Molossidae - Free-tailed Bats

# Family Mormoopidae



**Peter's Ghost-faced Bat**  
*(Mormoops megalophylla)*

# Family Phyllostomidae



California Leaf-nosed  
(*Macrotus californicus*)





# Family Phyllostomidae

Mexican Long-tongued  
(*Choeronycteris mexicana*)



# Family Phyllostomidae



Lesser Long-nosed  
(*Leptonycteris curasoae*)  
Listed Endangered Species

# Family Vespertilionidae

(Vespers: Big-eared bats)



Allen's Lappet-browed Bat  
(*Idionycteris phyllotis*)



Spotted Bat  
(*Euderma maculatum*)



# Family Vespers: Big-eared Bats



Townsend's Big-eared Bat  
(*Corynorhinus townsendii*)

Pallid Bat

(*Antrozous pallidus*)





## Bat Fact...



Pallid bats listen to insect footsteps and can respond accurately up to 16 feet away to a sound lasting only  $1/4,000^{\text{th}}$  of a second !!



# Family Vespers...

Hoary Bat  
(*Lasiurus cinereus*)



Silver-haired Bat  
(*Lasionycteris noctivagans*)



# Family Vespers...

Eastern Red Bat  
(*Lasiurus borealis*)



Western Red Bat  
(*Lasiurus blossevillii*)

# Family Vespers...

Western Yellow Bat  
(*Lasiurus xanthinus*)



Long-eared Myotis  
(*Myotis evotis*)

# Family Vespers...



Southwestern Myotis  
(*Myotis auriculus*)

Fringed Myotis  
(*Myotis thysanodes*)





# Family Vespers...



**Southwestern Cave Myotis**

*(Myotis velifer brevis)*

**Yuma Myotis**  
*(Myotis yumanensis)*



# Family Vespers...

Long-legged Myotis  
(*Myotis volans*)



Arizona Myotis  
(*Myotis lucifugus occultus*)

# Family Vespertilionidae



California Myotis  
(*Myotis californicus*)

Western Small-footed Myotis  
(*Myotis ciliolabrum*)





# Family Vespers...



**Western Pipistrelle**  
*(Pipistrellus hesperus)*

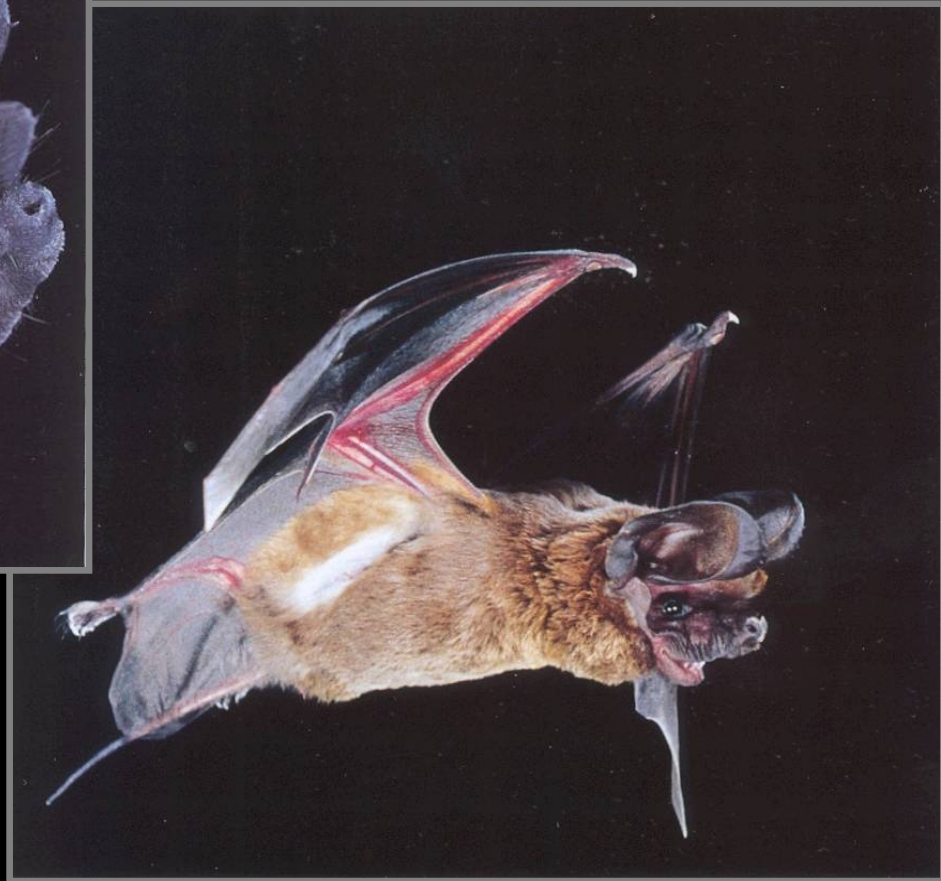
**Big Brown Bat**  
*(Eptesicus fuscus)*



# Family Molossidae



**Big Free-tailed Bat**  
*(Nyctinomops macrotis)*





# Family Molossidae



**Mexican Free-tailed Bat**  
*(Tadarida brasiliensis)*

**Pocketed Free-tailed Bat**  
*(Nyctinomops femorosaccus)*





# Family Molossidae

Underwood's Mastiff Bat  
(*Eumops underwoodi*)



Greater Western Mastiff Bat  
(*Eumops perotis californicus*)

# Photo Credits

- J. Scott Altenbach,  
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# Bat Fact Credits



## **Important Bat Facts**

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**The End**

